

NOTES ON THE MECISTORHINUS-ANTITEUCHUS  
GENERIC COMPLEX OF DISCOCEPHALINE  
PENTATOMIDS (HETEROPTERA,  
PENTATOMIDAE)

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In the course of preparing a generic revision of the pentatomid subfamily Discocephalinae, one of the major problems confronting the author was that of differentiating the two Dallasian genera *Mecistorhinus* and *Antiteuchus* from one another. Dallas (1851) was rather lavish in his description of *Mecistorhinus* but contrastingly niggardly in his treatment of *Antiteuchus*, being content to establish the genus on the basis of merely two characters used in the couplets of a generic key. As a consequence there has always been considerable confusion regarding the exact identity of these two genera. Of course, since there are numerous species involved, the question of which species belongs to which genus naturally arises. The lack of detailed anatomical knowledge, or rather the lack of the application of it, has been responsible for the more or less chaotic situation in which we find ourselves at the present time.

It appears that only a few of numerous readily observable external characters had previously been used to distinguish these two genera from one another. Successive students of the group have added little to augment our previous knowledge and even as remarkable an hemipterist as Stål was, he relied upon such subtle features as the different degrees of convexity of the body in order to establish subgeneric divisions. We know that such a character as curvature or convexity is a rather weak one since it is subject to varying interpretation, depending upon the individual student. During the course of the present research all possible morphological characters of these insects were studied in great detail and their uses as diagnostic characters evaluated; especial attention was given to the composition of

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the male and female external genitalia to determine their similarities and their contrasts. A number of new characteristics have been discovered that appear to add materially to our better understanding of the differences between these genera.

In his final work on the Discocephalinae, Stål (1872) used Burmeister's genus *Dinocoris* as the taxomic basis for the analysis of the complex under consideration in this paper. He broke *Dinocoris* down into three subgenera, to wit, *Dinocoris* (sens. typ.), *Mecistorhinus*, and *Antiteuchus*. Into the first he placed the species *Pentatoma macraspis* Perty and *Antiteuchus variegatus* Dallas, both of which were subsequently transferred to the genus *Neodine* Kirkaldy. In the subgenus *Mecistorhinus* he included eight species, only two of which rightfully belong there, whereas in the subgenus *Antiteuchus* he placed only two of ten then known species, the others either being assigned to *Mecistorhinus* or left unassigned for want of better information concerning them. No changes were made in this arrangement until Kirkaldy published his Catalogue (1909); he followed Stål's lead, added a new species that had been described since Stål's time, and erected the genus *Neodine* to take care of the above-mentioned species *macraspis* and *variegatus*, which do not at all belong in the genus *Dinocoris* Burmeister. Thus the situation has existed up to the present time.

For the purpose of clarifying the problem in my own mind and of possibly contributing a little aid (or possibly confusion) to future students of these pentatomids, the following summary of observations is being presented. The study was made possible through partial use of a grant-in-aid (#G-9830) from the National Science Foundation which was given for the larger project, that of revising the subfamily Discocephalinae. In the course of this study various European as well as American museums were visited and, before coming to the conclusion embodied in this article, as many species and as many specimens of *Mecistorhinus*, *Antiteuchus*, and *Neodine* were examined as were available in those different institutions.

In spite of the rather lengthy description given by Dallas for *Mecistorhinus* only three characters used by him are really pertinent to a generic study. These are: a) the ratio of the length of the head to its width, b) the length of the rostrum, and c) the proportional lengths of the antennal segments. Funda-

mentally these are important, for they do, in part, distinguish *Mecistorhinus* from *Antiteuchus*, but there are other, and I believe equally good or even better, characters that, when used in conjunction with those just mentioned, will clearly demark the two genera and establish their respective identities. In the latter category I would include such characters as the nature of the apical margin of the terminal abdominal tergite in the male insect; the size of the scutellum and the length of the frenum; the length of the corium with respect to the length of the scutellum; the ratios of the rostral segmental lengths; the form and special features of the mesosternum; the form of the basal plates of the female genital valves; and the construction of the genital capsule in the male, with particular attention given to the composition of the proctiger and the form of the heads of the parameres or claspers.

#### Genus *Mecistorhinus* Dallas

With these items in mind let us first analyze *Mecistorhinus*, given the following diagnosis:

HEAD Averaging one-third longer medially than wide across the greatest diameter (which is just in front of the eyes), surface concave, the margins broadly and sometimes very strongly reflexed, in some species so much so as to produce a scoop-shaped form; very weakly, if at all, sinuate before the eyes and then gradually converging to a rounded apex, frequently with a small apical sinus between the overlapping juga. ANTENNAE Only moderately long, not reaching the middle of the scutellum nor the area where the frena end; basal segment shorter than segment II, the latter always much more than half of the length of segment III, usually subequal with it. SCUTELLUM Reaching the fifth abdominal tergite in the female, and in the male not attaining the apex of the terminal tergite; the frena end just a slight distance beyond the middle. HEMELYTRA Corium always exceeding the apex of the scutellum by about the length of one connexival segment. ROSTRUM very long, nearly reaching the apex of the abdomen, in the female attaining, at least, the base of the sixth abdominal sternite and in the male reaching the middle of the seventh segment; in at least two species the rostrum is longer than the entire body; apex of segment II reaching, at least, the metacoxae, in some species exceeding it, segments III and IV subequal or segment IV a little longer. MESOSTERNUM Somewhat bilaterally tumid, at least anteriorly, and there shallowly sulcate longitudinally, the sulcus evanescent posteriorly and there replaced with a thin, low, median carina; the apical margin of the segment truncate. METASTERNUM Narrowly hexagonal with a low, thin, median carina. TERMINAL ABDOMINAL TERGITE IN THE MALE (Fig. 1) The apical margin forming one continuous transverse concave arc without a median retrorsely



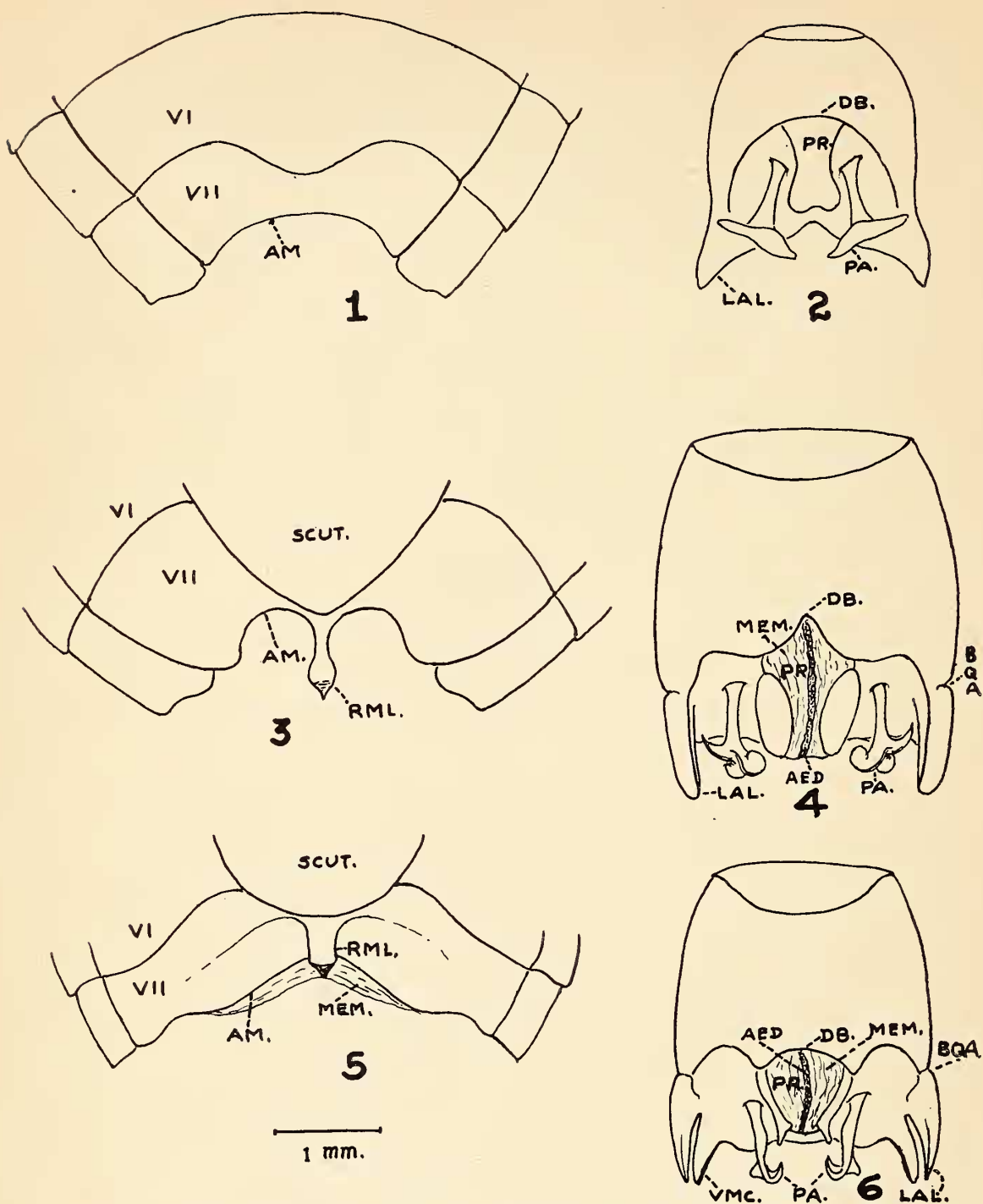


FIG. 1. *Mecistorhinus obscurus* Dallas, showing 6th and 7th tergites in male.

FIG. 2. *Mecistorhinus obscurus* Dallas, the pygophore of the male.

FIG. 3. *Antiteuchus panamensis* Ruckes, showing 6th and 7th tergites in male.

FIG. 4. *Antiteuchus panamensis* Ruckes, the pygophore of the male.

FIG. 5. *Callostethus guttatopunctatus* (Fabr.) showing 6th and 7th tergites in male.

FIG. 6. *Callostethus guttatopunctatus* (Fabr.), the pygophore of the male.

ABBREVIATIONS: AED.—aedeagus; AM.—apical margin of 7th tergite; BQA.—basal quasi articulation; DB.—dorsal border; LAL.—lateral apical lobes; MEM.—membrane; PA.—paramere; PR.—proctiger; RML.—retorse median lobe; SCUT.—apex of scutellum; VMC.—ventral marginal cusp.; VI and VII—the sixth and seventh tergites.

produced lobe or process. EXTERNAL MALE GENITALIA (Fig. 2) Dorsal border of the capsule very shallowly sinuate or, more usually, not sinuate at all; each lateral apical lobe acute, retrorsely produced and apically divergent, broadly attached to the wall of the capsule without evidence of any articulatory joint; proctiger completely sclerotized dorsally, somewhat dilated apically into two small, divergent lobes; all parts of the aedeagus obscured from the dorsal aspect; heads of the parameres transverse, stoutly irregular fusiform and lying obliquely across the lateral apical lobes of the capsule. EXTERNAL FEMALE GENITALIA Basal plates of the valves subtriangular, about as long as wide, their angles rounded, their apical margins taken together forming a continuous transverse arc across the abdomen.

To this genus belong the following currently known species: *rufescens* Dallas (type species); *semilugens* Bergroth; *coralium* Ruckes; *complanatus* (Distant); *josephi* Stål; *tibialis* Ruckes; *obscurus* Dallas; *guatemalensis* (Distant);

Several new species are in the process of being described and will eventually be added to the above list.

#### Genus *Antiteuchus* Dallas

Contrast now the genus *Antiteuchus* with the following characteristics:

HEAD Subsequal in length medially to the greatest width just before the eyes, the surface flattish, no evidence of any broadly reflexed margins, the margins before the eyes distinctly sinuate, then subparallel and/or sigmoidal, the apex rather evenly and broadly rounded, apparently without a minute incisure between the overlapping juga. ANTENNAE More than moderately long, reaching beyond the middle of the scutellum, and usually past the area where the frena end; segment II usually shorter than segment I, seldom longer, but then never more than half the length of segment III, most commonly much shorter than segment III, at times no more than one-fifth as long, never subequal to it. SCUTELLUM (Fig. 3) Reaching beyond the fifth abdominal tergite in the female and usually attaining the apical margin of the terminal tergite in the male; the apex more angularly rounded, sometimes subtriangular in outline; frena ending past the middle as in *Mecistorhinus*. HEMELYTRA Corium exceeding the apex of the scutellum but ordinarily by less than the length of the adjacent connexival segment. ROSTRUM Only moderately long, never reaching to the anterior margin of the fifth abdominal tergite in either sex; apex of segment II hardly surpassing the mesocoxae, more commonly just reaching them; segment IV always a little shorter than segment III. MESOSTERNUM Usually feebly tumid, not distinctly sulcate anteriorly, but becoming weakly carinate posteriorly, much as in *Mecistorhinus*. METASTERNUM Narrowly hexagonal with a low, thin carina, much as in *Mecistorhinus*. TERMINAL ABDOMINAL TERGITE IN THE MALE (Fig. 3) Apical margin transversely arcuate, not broadly deflexed or impressed, interrupted in the middle and there

provided with a retrorse flat, narrow, linguiform, hastiform, spatulate, or filiform process, which arises from the extreme margin of the segment or near it; the apex of this process is usually strongly deflexed and transversely rugose. **EXTERNAL MALE GENITALIA** (Fig. 4) Dorsal border of the capsule deeply sinuate centrally, frequently triangularly so; each lateral apical lobe retrorsely produced, obtuse, stubby and usually digitiform, the ental surface concave, more or less parallel to each other or incurved, never divergent apically; each lobe is attached to the capsule by a distinct basal quasi articulation; proctiger sclerotized only on the lateral surfaces, the dorsal median portion being membranous, through which parts of the aedeagus are visible from above; the posterior ends of the sclerotized sides (at the crest) usually somewhat bulbous with small protruding lobes, or at least tumid; heads of parameres facing posteriorly or slightly laterally, not overlaying the lateral apical lobes of the capsule; the heads, at least, trilobed, the lobes partially twisted and in some species resembling minute propellers. **EXTERNAL FEMALE GENITALIA** Basal plates of the valves subtrapezoidal, somewhat wider than long, their apical margins truncate and taken together forming more or less a straight line which is subparallel to the apical margin of the abdomen.

To this genus belong the following currently known species: *variolosus* (Westwood) (type species); *melanoleucus* (Westwood); *piceus* (Palisot de Beauvois); *mixtus* (Fabricius); *marmoreus* (Spinola); *panamensis* Ruckes; *tripterus* (Fabricius); *sepulcralis* (Fabricius); *peruensis* Ruckes; *marmoratus* Erichson; *tesselatus* (Westwood); *punctiger* (Westwood); *annulicornis* (Fieber).

Seven or eight new species of *Antiteuchus* are in the process of being described and will eventually be added to this list.

Through the kindness of Dr. J. O. Husing of the Martin Luther Universität zu Halle, I was privileged to study Fieber's type of *Marcothyreus annulicornis* which was sent me while I was working at the British Museum. The generic name *Macrothyreus* being preoccupied, Kirkaldy eventually assigned this species to the genus *Grimgerda* Kirkaldy. Intensive examination of this type specimen indicates that it is merely a species of *Antiteuchus* and does not merit generic status of its own. Every character set forth above for *Antiteuchus* fits the species *annulicornis*; hence hereafter this discocephaline should be known as *Antiteuchus annulicornis* (Fieber).

#### Subgenus **Neodine** Kirkaldy, new taxon

The genus *Neodine* Kirkaldy conforms to all the requirements set down for *Antiteuchus*, including the form of the lobate parameres and the re-



trorsely produced process arising from the extreme margin of the terminal abdominal tergite in the male. The basal plates of the female genital valves are provided with mildly sinuate apical margins, but since their form is subtrapezoidal and they are wider than long, they closely resemble those found in *Antiteuchus*. *Neodine* does possess, however, a very long scutellum with a narrowed, long postfrenal portion and an acutely rounded, subtriangular apex which nearly reaches the tip of the abdomen in both sexes. The most critical examination of the three known species of *Neodine* does not reveal enough difference between them and the numerous species of *Antiteuchus*, aside from the different forms of the scutellum, to warrant the retention of full generic status for *Neodine*. With these facts in mind it is deemed advisable now to reduce *Neodine* to subgeneric rank within the genus *Antiteuchus*.

To this subgenus belong the following currently known species: *macrasis* (Perty), *variegatus* (Dallas), and *tatei* Ruckes.

#### Genus *Callostethus*, new genus

Turning attention now to the species variously classified as *Mecistorhinus guttatopunctatus* (Fabricius) or *Antiteuchus guttatopunctatus* (Fabricius), we are faced with an entirely different problem. This species has some of the characteristics prescribed for *Antiteuchus* (none for *Mecistorhinus*) but differs in several major respects.

The HEAD, ANTENNAE, and ROSTRUM are similar, but the SCUTELLUM (Fig. 5) is less angularly rounded at the apex and less sinuate along the lateral margins. Other and more critical characters differ as follows: HEMELYTRA Corium surpassing the apex of the scutellum by the length of one connexival segment. MESOSTERUM Not bilaterally tumid, barely elevated, but provided with a percurrent, low, obtuse, subcalloused ridge, which is somewhat fusiform in outline and which continues onto the metasternum as a thin median carina; the apical margin of the mesosternum is very narrow, almost angulate. METASTERNUM Essentially rhomboidal, rather than narrowly hexagonal, anterior and posterior margins very narrow, almost angulated, and, as stated above, provided with a thin low median carina. TERMINAL ABDOMINAL TERGITE IN THE MALE (Fig. 5) Apical margin broadly deflexed and strongly impressed, bordered by a wide membrane; the retrorsely produced median lobe is short and arises from nearer the center of the disc rather than from the extreme apical margin as in *Antiteuchus* and *Neodine*, and its triangular apex is abruptly deflexed and not transversely rugose. MALE EXTERNAL GENITALIA (Fig. 6) Dorsal border of the capsule very shallowly, but distinctly, sinuate centrally; lateral apical lobes cuneiform, subparallel, retrorsely produced, with a distinct basal quasi articulation, as in *Antiteuchus*, but each lying parallel and subequal to an acutely rounded, retrorse, long cusp (VMC) developed from each lateral end of the ventral apical margin of the capsule, thus giving the false

impression that the lateral apical lobes are compounded of two members, i.e., a dorsal and a ventral part; proctiger sclerotized only laterally, the dorsal median portion membranous through which parts of the aedeagus are visible from above; the sclerotized lateral plates are projected beyond the apical surface (crest) of the proctiger into small, flat, triangular lobes; parameres uncinate or hook-shaped, deflexed over the ventral apical margin of the capsule, where their very acute apices tend to converge, different in superficial appearance from those found in *Mecistorhinus* and quite dissimilar to those seen in *Antiteuchus*. EXTERNAL FEMALE GENITALIA Basal plates of the female valves transversely suboval, their apical margins taken together forming a feeble are subparallel to the apex of the abdomen. ANTERIOR PRONOTAL MARGINS Not weakly elevated, without a posteriorly adjacent short impressed groove, such as is found in *Mecistorhinus*, *Antiteuchus*, and *Neodine*.

Altogether there are far greater differences between *guttatopunctatus* and any species of *Mecistorhinus* and *Antiteuchus* than are found between the species of *Neodine* and the species of *Antiteuchus*. Therefore if, as proposed, *Neodine* is reduced to subgeneric rank, then a new generic name should be created for the species *guttatopunctatus* to elevate it to a higher status than it now enjoys. To this end I propose the name *Callostethus*, to signify the presence of the calloused ridge on the mesosternum, and suggest that hereafter this species be called *Callostethus guttatopunctatus* (Fabricius).

In summary the following table shows the differences between the several genera in this complex:

Structure	<i>Mecistorhinus</i>	<i>Antiteuchus</i> and <i>Neodine</i>	<i>Callostethus</i>
HEAD			
Length to width	Longer than wide	Subequal or shorter	Subequal or shorter
Surface	Somewhat concave, margins reflexed	Flattish, margins not reflexed	Flattish, margins not reflexed
Margin before the eye	Barely sinuate, if at all	Distinctly sinuate	Distinctly sinuate
ANTENNAE			
Length	Do not reach the middle of scutellum	Exceed the middle of scutellum	Exceed the middle of scutellum
Ratio of segment II to III	Usually subequal; II always more than half of the length of III	Segment II always much shorter; never more than half of III	Segment II less than one-fifth of the length of III



## ROSTRUM

Length.	Nearly reaches the apex of abdomen; sometimes exceeds it	Does not exceed the middle of the abdomen	Does not exceed the middle of the abdomen
Ratio of segment III to IV	Subequal, or segment IV a little longer	Segment IV always slightly shorter than segment III	Segment IV always slightly shorter than segment III
MESOSTER- NUM	Bilaterally mildly tumid; anteriorly sulcate, posteriorly feebly carinate	Bilaterally mildly tumid; anteriorly sulcate, posteriorly feebly carinate	Not bilaterally tumid; a percurrent median obtuse, subcaloused ridge present
METASTER- NUM	Narrowly hexagonal, medially carinate	Narrowly hexagonal, medially carinate	Equilaterally rhomboidal, medially carinate
TERMINAL AB- DOMINAL TER- GITE IN MALE	Apical margin not deflexed, forming a continuous, even, transverse arc	Apical margin not broadly deflexed or impressed; a retrorse median lobe arising from the extreme apical margin	Apical margin broadly deflexed and impressed, with the retrorse median lobe arising from the surface of the disc, remote from the apical margin

MALE GENI-  
TALIA

Dorsal border of capsule	Not sinuate centrally	Deeply sinuate centrally	Mildly, but distinctly sinuate centrally
Lateral apical lobes of capsule	Retrorsely produced, acutely triangular, broadly attached at base without a quasi articulation; apices divergent	Digitiform, inwardly concave, basally with a quasi articulation; subparallel or convergent or incurved	Cuneiform, subacute; basally with a quasi articulation; parallel to a large acute cusp developed from the lateral ends of the ventral margin of the capsule
Proctiger	Completely sclerotized aedeagus obscured from above	Median dorsal portion membranous, aedeagus in part visible from above	Median dorsal portion membranous, aedeagus in part visible from above

Parameres (Heads of)	Transverse, fusi- form, placed ob- liquely across the lateral apical lobes	Multilobate, lobes, partially twisted, facing posteri- only free from the lateral ap- ical lobes	Uncinate or acutely hooked, deflexed over the ventral apical margin of the capsule, apices convergent
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#### FEMALE GENI- TALIA

Basal plates	Subtriangular, ap- ical margins taken together forming a trans- verse arc	Subtrapezoidal, apical margins taken together forming a more or less trans- verse straight or mildly sinuate line, subparallel to the apical margin of the abdomen	Subtrapezoidal or suboval, apical margins taken to- gether forming a more or less transverse straight line, fee- bly arcuate, sub- parallel to the apical margin of the abdomen
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ANTERIOR PRONOTAL MARGIN	Weakly elevated and subtended by a short im- pressed, trans- verse groove	Weakly elevated and subtended by a short im- pressed, trans- verse groove	Not elevated, the short transverse, impressed groove behind the mar- gin lacking
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